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Adverse Events Associated with Ephedrine-Containing Products — Texas, December 1993–September 1995

During December 1993–September 1995, the Bureau of Food and Drug Safety, Texas Department of Health (TDH), received approximately 500 reports of adverse events in persons who consumed dietary supplement products containing ephedrine and associated alkaloids (pseudoephedrine, norephedrine, and N-methyl ephedrine). This total included reports by individuals and reports identified by the Bureau of Epidemiology, TDH, in a review of records from the six centers of the Texas Poison Center Network. Reported adverse events ranged in severity from tremor and headache to death in eight ephedrine users and included reports of stroke, myocardial infarction, chest pain, seizures, insomnia, nausea and vomiting, fatigue, and dizziness. Seven of the eight reported fatalities were attributed to myocardial infarction or cerebrovascular accident. This report describes three patients in which the recommended dosage for the dietary supplements reportedly was not exceeded, summarizes results from ongoing investigations, and underscores the potential health risks associated with the use of products containing ephedrine.

Case Reports

Patient 1. In December 1993, a 44-year-old man died from acute coronary artery thrombosis approximately 3 weeks after beginning daily use of a dietary supplement containing ephedrine. He was an active swimmer and tennis player with no known cardiovascular risk factors. He received the dietary supplement from his family physician during a routine physical examination when he requested a substitute for his daily coffee and cocoa. He used the product as directed and eliminated his coffee and cocoa use. On December 18, 1993, after playing tennis and returning home, he sustained a cardiorespiratory arrest. An autopsy revealed an acute thrombus in the left anterior descending coronary artery. All other coronary lumina were patent, although calcified with focal narrowing to approximately 50%.

Patient 2. In May 1995, a 35-year-old woman who was taking no other prescription or over-the-counter (OTC) medications began use of a dietary supplement containing ephedrine for weight loss. She used the supplement within the dosage recommended on the label for approximately 30 days, discontinued use of the supplement while on a 1-week vacation, then resumed the usual dosage when she returned on June 24, 1995. On June 25, while sleeping, she had acute onset of symptoms including anterior

Ephedrine — Continued

chest pain that radiated to her left shoulder and arm, numbness of the left arm and hand, diaphoresis, and shortness of breath. She was taken to the hospital and her pain remitted after she was treated with nitroglycerin and morphine. Although an electrocardiogram and cardiac enzymes indicated an acute myocardial infarct, cardiac catheterization indicated normal cardiac function and normal coronary arteries. She had no history of cardiovascular risk factors. She was discharged with a diagnosis of acute myocardial infarction secondary to cardiac spasm and was advised to discontinue use of the dietary supplement that contained ephedrine. Since discontinuing use of the product, she has had no additional cardiac-related symptoms.

Patient 3. On August 17, 1995, a 38-year-old woman with no history of seizures experienced two petit mal seizures beginning at 11 p.m. She experienced two additional petit mal seizures the following morning, and that afternoon had onset of a generalized tonic-clonic seizure lasting approximately 2 minutes, during which she required respiratory assistance. On August 17, she had taken two tablets of an ephedrine-containing dietary supplement at 10 a.m. and two more 5 hours later as directed on the product label. She denied use of other drugs except oral contraceptives. During August 19–22, she experienced five additional episodes of unresponsiveness while sitting or standing; while waiting in the office of a neurologist, she sustained an additional generalized seizure witnessed by the neurologist and staff. She was hospitalized for monitoring, treated with antiseizure medication, and diagnosed with new onset of tonic-clonic seizures with complex partial seizures. Other possible causes of seizures were excluded. She was discharged and was advised to avoid any medications or products that contained ephedrine, pseudoephedrine, or related drugs. Since discontinuing use of the product, she has had no additional seizures.

Ongoing Investigations

TDH also has received reports of persons who had acute onset of palpitations and fainting after using ephedrine-containing products marketed as "beyond smart drugs" for "euphoric stimulation, highly increased energy levels, tingly skin sensations, enhanced sensory processing, increased sexual sensations, and mood elevations." Although these substances have been sold without warnings or contraindications on the information labels, one label indicated that the product "acts on the same basis as MDMA (3,4-methylenedioxy-methamphetamine, "ecstasy") triggering similar but not identical physical reactions in the body." TDH investigators purchased a product labeled "no side effects" that also listed wild Chinese ginseng as the only ingredient. Laboratory analysis indicated that a single tablet contained 45 mg ephedrine and 20 mg caffeine; the label on this product instructed users to take five tablets, representing a total ephedrine dosage of approximately 11 times the usual recommended OTC dosage of bronchodilator products, which contain 12.5 mg–25.0 mg of ephedrine per dose.

Ephedrine-containing products usually are marketed and labeled for weight loss, energy, "pep," performance enhancement, or body building or as a substitute for illicit drugs such as MDMA. They are commonly labeled as "natural" or "herbal" and use common names for herbs as the source of active ingredients (ma huang, Chinese ephedra, and *Sida cordifolia*—another plant source with small amounts of ephedrine alkaloids). An additional 400 reports of adverse events involved OTC drug products

Ephedrine — Continued

containing ephedrine that were labeled as required for use as bronchodilators but marketed in a manner to imply their effectiveness for weight loss and as stimulants.

Since September 1995, the Texas Poison Control Network has received approximately 300 additional reports of adverse events in persons consuming products containing ephedrine. These reports are being investigated by TDH.

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Editorial Note: The three reports presented here and the approximately 500 reports of adverse events received by TDH underscore that use of dietary supplements containing ephedrine and related alkaloids can be associated with a spectrum of adverse health events. Although a cause-and-effect relation cannot be established for the three patients presented here, no other cause was found to explain their medical conditions, all of which are compatible with documented effects of ephedrine consumption. Ephedrine and associated alkaloids are structurally similar to the amphetamines (*1*) and, by stimulating adrenergic receptors, can increase arterial blood pressure through both peripheral vasoconstriction and cardiac stimulation. Adverse effects from ephedrine can be variable, and do not always depend on the dose consumed. Serious adverse effects of ephedrine and related alkaloids, such as acute cardiovascular and central nervous system stimulant effects, can occur in susceptible persons with use of low dosages. Other adverse effects associated with the use of ephedrine include palpitations, tachycardia, hypertension, coronary spasm, paranoid psychoses, convulsions, respiratory depression, coma, and death (*2*). Particularly when used in combinations with phenylpropanolamine (PPA) and caffeine, ephedrine has been associated with stroke secondary to intracranial hemorrhage, seizures, mania, and psychosis (*3,4*). Combinations of ephedrine and caffeine have been documented to have side effects substantially greater than those from the consumption of either compound alone or of a placebo (*5–8*).

In the United States, ephedrine, pseudoephedrine, and PPA have been marketed extensively for some OTC uses. For example, preparations containing ephedrine are marketed for oral use as a short-term, OTC bronchodilator for persons with mild asthma. The Food and Drug Administration (FDA) has proposed to remove oral ephedrine drug products from the OTC market based on their use in the production of illicit drugs and on their misuse and abuse as stimulants and for weight loss.* Pseudoephedrine, an ephedrine alkaloid contained in many OTC decongestant, cold, and allergy products, is associated with fewer cardiovascular and central nervous system stimulant effects than ephedrine. PPA, another ephedrine alkaloid, also is contained in OTC decongestant, cold, and allergy preparations and is marketed for use in the United States as a weight-control agent.

Dietary supplements can be marketed with no premarket safety evaluation by FDA. For dietary supplements that include an ingredient marketed in the United States before October 15, 1994—such as products containing sources of ephedrine alkaloids—no FDA review is required. For dietary supplements that include an ingredient that was not marketed before October 15, 1994, manufacturers or distributors must submit a notice to FDA 75 days before marketing; however, the notice is not required to in-

*60 FR 38,643.

Ephedrine — Continued

clude objective evidence of safety, only an explanation of why there is a reasonable expectation that use of the supplement will be safe.

Because many of these products are marketed as "natural" or promoted as foods, consumers may assume incorrectly that the products are safe and without side effects. For example, the TDH investigation determined that, during medical evaluations, some patients did not report taking ephedrine-containing dietary supplements because they did not initially believe that a "natural" or "herbal" food supplement could be related to their illness. In addition, health-care providers or consumers may not have realized that ephedrine alkaloids and other stimulants were in the product because they were not included in the ingredient listing or because an unfamiliar name for the compound was used.

Because of misuse of and adverse reactions to products containing ephedrine, approximately 21 states have passed regulations stricter than federal regulations, including requiring that ephedrine drug and food products be made available by prescription only; moving ephedrine products to the schedules of controlled substances; and prohibiting weight loss, appetite control, or stimulant claims on the labels. Because of concerns about the safety of dietary supplements that contain sources of ephedrine alkaloids, a working group convened by FDA in October 1995 made several recommendations about potency limits and label warnings to promote safer use of these products. FDA has been evaluating these recommendations and, because of continuing concerns about the safety of these products, is convening a meeting of the Food Advisory Committee and the special working group on August 27–28, 1996, in Washington, D.C.

The findings in this report underscore the need for the general public and for health-care providers to be aware of potential health hazards associated with use of dietary supplements containing ephedrine and associated alkaloids. Health-care providers should question patients about their use of dietary supplements and herbal medications and report any adverse effects to dietary supplements, including those containing ephedrine and associated alkaloids, to FDA's MedWatch Program, telephone (800) 322-1088 ([800] FDA-1088). Consumers can report adverse events to the FDA Consumer Hotline, (800) 322-4010 ([800] FDA-4010).

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Update: Diphtheria Epidemic — New Independent States of the Former Soviet Union, January 1995–March 1996

Epidemic diphtheria reemerged in the New Independent States (NIS) of the former Soviet Union, beginning in the Russian Federation in 1990 and affecting all 15 NIS by the end of 1994 (*1,2*). Approximately 90% of all diphtheria cases reported worldwide during 1990–1995 were reported from the NIS (World Health Organization [WHO], unpublished data, 1996). During 1993–1994, WHO, partner organizations, and national ministries of health developed a strategy to control the epidemic with a priority goal of achieving coverage of >90% among persons aged ≥3 years with a single dose of diphtheria toxoid through mass vaccination campaigns and achieving coverage for routine childhood vaccination (i.e., four doses of diphtheria and tetanus toxoids and pertussis vaccine by age 2 years) of >95%. This report summarizes data provided to WHO about the incidence of diphtheria (Table 1) and efforts to implement control measures in the NIS during 1995 and January–March 1996.

Overall, from 1994 to 1995, reported diphtheria cases in the NIS increased 5.2%, from 47,628 to 50,412 cases (Figure 1) with approximately 1500 deaths in 1995. Since the epidemic began in 1990, approximately 125,000 cases and 4000 deaths have been reported in the NIS. The number of cases in 1995 reflects an 11% decrease in reported cases in the Russian Federation but a near doubling of cases from other NIS. However, following expanded control efforts, by the end of 1995 most countries began reporting decreases from the same periods in 1994. During January–March 1996, a total of 6179 diphtheria cases were reported in the NIS, a 59% decrease from the 14,931 cases reported during the same period in 1995.

Russian Federation. During 1990–1995, approximately 97,000 diphtheria cases and 2500 deaths were reported in the Russian Federation. Reported cases decreased from 39,582 (26.9 cases per 100,000 population) in 1994 to 35,652 (24.3) in 1995. Reported deaths decreased from 1104 (case-fatality rate: 2.8%) in 1994 to 740 (2.1%) in 1995. Vaccination coverage among persons aged ≥18 years with at least one dose of diphtheria toxoid during the preceding 10 years had increased to 70%–80% by the end of 1995 from an estimated 20% in 1990. In 1995, reported coverage with a primary series of diphtheria toxoid among children aged 12–23 months was 92.7%.

Western NIS and Baltic countries. In Ukraine, reported cases nearly doubled, from 2990 (5.8 cases per 100,000) in 1994 to 5280 (10.3) in 1995. Mass vaccination campaigns targeting adults were conducted in seven of the 27 regions in April 1995; the remaining regions were targeted for mass vaccination in late 1995 and in 1996. Overall, vaccine coverage in adults was an estimated 60%. In Belarus, Latvia, and Lithuania, increases in diphtheria cases were reported in 1995 (Table 1); however, mass adult vaccination efforts in 1995 and 1996 achieved coverage of 60%–80%, and efforts to complete vaccination of all adults are continuing. In Moldova, reported cases increased from 376 (8.5 cases per 100,000 population) in 1994 to 418 (9.4) in 1995. A mass vaccination campaign was conducted in the summer and fall of 1995, increasing coverage among adults to >80%; a sustained decline in cases began in October 1995.

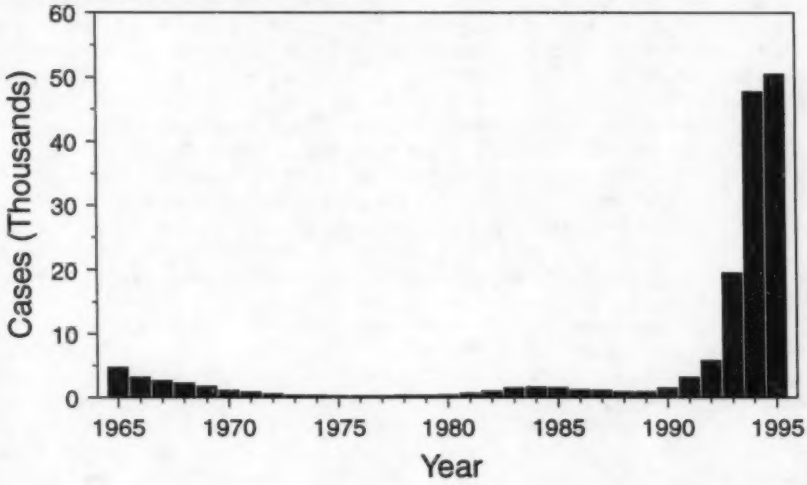
TABLE 1. Number and rate of diphtheria cases, 1994–1995, percentage change in number of cases from 1994 to 1995 and first quarter of 1995 to first quarter of 1996, and level of coverage with diphtheria toxoid, 1995, by country — New Independent States of the former Soviet Union

Country	Population*	1994 Cases	1994 Rate†	1995 Cases	1995 Rate	% Change in number of cases: 1994 to 1995	% Change in number of cases: 1st quarter 1995 to 1st quarter 1996	% Coverage, 1995: Primary series at age 1 year	% Coverage, 1995: 1 dose, adult
Armenia	3.6	36	1.0	29	0.8	–19	–14	NA§	60¶
Azerbaijan	7.5	841	11.3	883	11.7	5	–85	>90	95
Belarus	10.1	230	2.3	322	3.2	40	–46	96	65
Estonia	1.6	7	0.5	19	1.2	171	–29	>90	30**
Georgia	5.4	294	5.4	419	7.7	43	–28	NA	65¶
Kazakstan	17.0	489	2.9	1105	6.5	126	–31	93	50
Kyrgyzstan	4.7	299	6.4	693	14.6	132	–15	93	70
Latvia	2.6	250	9.7	369	14.4	48	–71	NA	30††
Lithuania	3.6	38	1.0	43	1.2	13	–69	97	70
Moldova	4.4	376	8.5	418	9.4	11	–85	NA	>80
Russia	146.7	39,582	26.9	35,652	24.3	–10	–59	93	75
Tajikistan	6.1	1912	31.8	4455	73.0	133	–42	94	>95
Turkmenistan	4.1	60	1.5	87	2.1	45	90	92§§	30
Ukraine	51.3	2990	5.8	5280	10.3	77	–37	NA	60
Uzbekistan	22.8	224	1.0	638	2.8	185	–40	NA	50
Total	**298.5**	**47,628**	**16.1**	**50,412**	**16.9**	**5**	**–59**	–	–

*In millions.
†Per 100,000 population per year.
§Not available.
¶Adult coverage for Armenia and Georgia is based on less complete data than for other countries.
**Approximately 75% of adults were vaccinated during 1985–1987.
††The Latvian Ministry of Health considers coverage to be three doses for adults; an estimated 60%–70% have received at least one dose.
§§Coverage figure is for four doses of diphtheria and tetanus toxoids and pertussis vaccine (primary series plus first revaccination) at age 2 years.

Diphtheria Epidemic — Continued

FIGURE 1. Number of reported cases of diphtheria — New Independent States of the former Soviet Union, 1965–1995



In Estonia, cases increased from seven to 19, almost exclusively among ethnic Russians in border areas. Approximately 30% of adults were vaccinated during the campaign in 1995.

Central Asia. All of the Central Asian republics reported increases in reported diphtheria cases in 1995. In Tajikistan, reported cases increased from 1912 (31.8 cases per 100,000 population) in 1994 to 4455 (73.0) in 1995, with cases reported from all regions of the country. A mass vaccination campaign was conducted during October 1995 and reached >90% of adults (aged ≤50 years). The other Central Asian republics (Kazakstan, Kyrgyzstan, Uzbekistan, and Turkmenistan) reported a total of 2523 cases in 1995 (Table 1), representing a 135% increase over the total reported cases in 1994. Mass vaccination campaigns targeting both adults and children were initiated in Kazakstan, Kyrgyzstan, and Uzbekistan in 1995 and are to be completed during 1996. In Turkmenistan, vaccination campaigns for children were conducted in 1995; adults are being targeted in 1996.

Caucasus. Georgia reported a 43% increase in diphtheria cases during 1995 (419) over 1994 (294), and Azerbaijan reported a 5% increase; Armenia continued to report few cases (Table 1). Following revaccination efforts among schoolchildren, resulting in coverage of 96%, Azerbaijan conducted mass vaccination of persons aged 0–55 years during November 1995, achieving coverage of 95%. Reported cases in Azerbaijan during January–March 1996 are 85% below the same period in 1995. In Georgia and Armenia, adult vaccination campaigns began in 1995; however, coverage is <60% in some regions.

Reported by: Regional Office for Europe, World Health Organization, Copenhagen, Denmark. International Federation of Red Cross and Red Crescent Societies, Geneva, Switzerland. Child

Diphtheria Epidemic — Continued

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Editorial Note: The findings in this report highlight the first evidence of progress toward controlling the diphtheria epidemic in the NIS. WHO continues to consider the epidemic an international public health emergency. At the time of the disintegration of the former Soviet Union in 1991, all NIS relied on supplies of vaccine and antitoxin from Russia, and most lacked the financial resources to procure them from the international market. Governmental and nongovernmental organizations, such as the United States Agency for International Development, European Community Humanitarian Office, International Federation of Red Cross and Red Crescent Societies, WHO, United Nations Children's Fund (UNICEF), the government of Japan, and others, have initiated an effort, monitored by the Interagency Immunization Coordination Committee, to mobilize the needed materials (i.e., vaccine, syringes, needles, antitoxin, and antibiotics) for all of the NIS except Russia, which continues to be self-sufficient for all these materials.

This epidemic has been characterized by a high proportion of cases among adults; children were the predominant age group affected in previous epidemics (*3*). Much of the variation in incidence rates in the NIS during 1994 and 1995 was attributed to differences in the timing of the onset of the epidemic between countries; however, the success in implementing control measures is beginning to affect incidence rates. In countries that have achieved high coverage among adults, diphtheria incidence has decreased substantially, regardless of the level of incidence before the vaccination campaigns. The impact of mass vaccination of the adult population on slowing the course of the epidemic underscores the need for rapidly completing the vaccination campaigns in the other countries.

All the NIS have attempted to increase childhood vaccination coverage, including decreasing perceived contraindications to childhood vaccination and increasing the routine use of full-strength vaccine preparations in the primary series; routine childhood coverage is now high in most countries. Most countries also have reinstituted a school-entry booster dose and many of the national mass campaigns have included preschool-aged and school-aged children and adolescents in the target population.

Other control measures are important in efforts to further reduce transmission of diphtheria. Most of the NIS have made efforts to improve early diagnosis and treatment of cases. Moldova, Lithuania, and Azerbaijan have adopted the WHO recommendation to use empiric antibiotic treatment for close contacts of persons with diphtheria. Providing additional doses of diphtheria toxoid to at least certain portions of the population (e.g., adults aged 30–50 years in whom risk for severe disease and death is highest) will be needed to fully protect all persons. Because some epidemiologic features of this epidemic differ from those of the prevaccine era and the epidemiologic situation may vary among the NIS, ongoing surveillance and additional field studies are needed to track the course of the epidemic in each country.

The reemergence of epidemic diphtheria throughout the NIS after >30 years of successful control and the reports of >20 imported cases from the NIS into Europe (*1,2*) and Mongolia (WHO, unpublished data, 1996) emphasize the need for achieving and maintaining high levels of diphtheria immunity among both adults and children in the United States and other countries. The Advisory Committee on Immunization Practices recommends that all children receive a routine series of five doses of diphtheria

Diphtheria Epidemic — Continued

toxoid-containing vaccine with doses at ages 2, 4, 6, and 12–20 months and 4–6 years; boosters of diphtheria and tetanus toxoids should then be administered beginning at age 11–12 years (provided at least 5 years have passed since the last dose of diphtheria toxoid-containing vaccine) and every 10 years thereafter (*4–6*). Travelers to areas with diphtheria activity should review their vaccination status and receive age-appropriate vaccinations as needed.

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Progress Toward Poliomyelitis Eradication — Indonesia, 1995

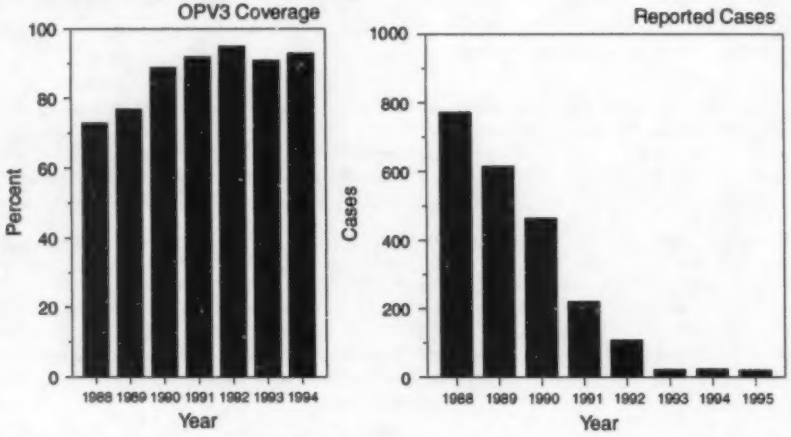
In 1988, Indonesia (1991 population: 181 million) adopted the goal of eradicating poliomyelitis by the year 2000. Although routine coverage with three doses of oral poliovirus vaccine (OPV3) has been >90% among 1-year-old children since 1991, cases of polio continue to be reported (Figure 1). To interrupt poliovirus transmission, National Immunization Days (NIDs)* were conducted during September 13–17 and October 18–22, 1995, resulting in vaccination of >22 million children aged <5 years (representing approximately 100% of the target population). NIDs are planned for September 10–14 and October 15–19, 1996, and in 1997. This report presents the polio surveillance data for Indonesia for 1995, which indicate that substantial improvements are necessary to meet the objectives of the polio-eradication initiative. Activities are under way to intensify surveillance for acute flaccid paralysis (AFP) and to identify the remaining reservoirs of wild poliovirus transmission.

Indonesia, which instituted AFP surveillance in 1995, requires all cases of AFP to be reported immediately to health authorities. A case of suspected polio is defined as AFP, including Guillain-Barré syndrome, in a child aged <15 years for which no other cause can be immediately identified, or any patient in whom a clinician suspects polio regardless of age. Stool specimens collected from AFP case-patients were sent to one of three designated laboratories in Bandung, Jakarta, and Surabaya for virus isolation. Poliovirus isolates were sent to the national laboratory in Jakarta to distinguish wild and vaccine-type polioviruses. Genetic sequencing of wild polioviruses was conducted at CDC.

*Mass campaigns over a short period (days to weeks) in which two doses of oral poliovirus vaccine are administered to all children in the target age group, regardless of prior vaccination history, with an interval of 4–6 weeks between doses.

Polio Eradication — Continued

FIGURE 1. Reported percentage coverage with three doses of oral poliovirus vaccine (OPV3) among 1-year-olds, by year, 1988–1994, and number of reported poliomyelitis cases, by year, 1988–1995 — Indonesia



Source: Ministry of Health, Indonesia.

The number of reported polio cases has decreased substantially since the start of the national Expanded Program on Immunization (Figure 1). In 1995, a total of 22 cases of AFP were reported, representing an AFP rate of 0.04 per 100,000 children aged <15 years; seven (33%) cases were investigated within 48 hours of report, 17 (78%) had stool specimens taken for virus isolation, and two (10%) cases had stool specimens taken within 2 weeks of paralysis onset. Of the 22 cases of suspected polio, 12 have been classified as confirmed polio cases (using the standard WHO case definition[†]) by virus isolation (five cases—two in case-patients and three in contacts of case-patients), with residual paralysis at 60 days' follow-up (four), or lost to follow-up (three). Four culture-confirmed cases of polio were associated with type 1 and one with type 3 wild polioviruses with onset of paralysis during March and August 1995. Four of these cases, in Java and Sumatra, occurred in unvaccinated children.

To define the molecular epidemiology of the type 1 wild polioviruses isolated from the four culture-confirmed cases in 1995, genetic sequencing was conducted on a 150-nucleotide interval at the VP1/2A junction of the viral genome (*1*). Because the poliovirus genome mutates at a rate of approximately two nucleotide substitutions per week, it is possible to quantify the genetic relatedness of isolates from different geographic areas and determine chains of transmission. Data summarizing the sequence relatedness among wild poliovirus isolates recently identified as endemic in South and East Asia suggested that the type 1 wild polioviruses isolated from Indonesia in 1995 form a distinct cluster and have been circulating in the country for at least 10 years. The genetic sequences of the isolates from Java and Sumatra, although

[†]A confirmed case of polio is defined as AFP and at least one of the following: 1) laboratory-confirmed wild poliovirus infection, 2) residual paralysis at 60 days, 3) death, or 4) no follow-up investigation at 60 days.

Polio Eradication — Continued

found at the same time on adjacent islands, differed enough to suggest that the two cases were not related epidemiologically.

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Editorial Note: Indonesia successfully conducted its first NIDs in 1995 and is improving surveillance for polio by requiring AFP reporting. The AFP reporting rate in Indonesia during 1995 (0.04 per 100,000) was substantially lower than the expected rate of one AFP case per 100,000 persons aged <15 years (the rate used to define a sensitive AFP surveillance system [653 cases would be expected each year in Indonesia if the rate reached one per 100,000]). To meet the objectives of the polio-eradication initiative, performance indicators other than the AFP rate (i.e., proportion of case investigations conducted within 48 hours of notification and proportion of cases for which two stool specimens were obtained within 2 weeks of paralysis onset) should be at least 80%, which indicates adequate surveillance. Major efforts are under way to strengthen the surveillance system as a guide to further polio-eradication activities in Indonesia; these efforts include establishing active AFP reporting (i.e., reviewing hospital discharge records for AFP in hospitalized patients) linked with timely AFP case investigations.

The low level of AFP reporting in Indonesia and the retrospective reviews of hospital records indicate that many persons with AFP or with physician-diagnosed polio are admitted to hospitals but are not reported to public health officials. Although a hospital early-warning system is in place to immediately report high-priority infectious diseases, active surveillance systems probably will be needed to increase sensitivity. These active systems will be valuable especially in densely populated urban areas.

For the global polio-eradication initiative, genetic analysis of wild poliovirus isolates has provided critically important information. The isolation of type 1 wild poliovirus in Java and Sumatra indicate that the virus is indigenous to Indonesia and has circulated for many years, and confirmed the independent evolution of at least two poliovirus reservoirs in the country. These findings suggest that wild poliovirus has remained endemic in Indonesia despite routine high coverage with OPV3 in recent years and underscore the need for supplementary vaccination strategies (i.e., NIDs) to interrupt poliovirus transmission.

Indonesia, the fourth most populous country in the world, is of critical importance to the global polio-eradication initiative. Improved virologic surveillance already has identified at least two indigenous poliovirus reservoirs. The government of Indonesia, in cooperation with the major partner agencies contributing to the polio-eradication initiative (including WHO, United Nations Children's Fund [UNICEF], and Rotary International), will need to establish a sensitive AFP surveillance system. Adequate surveillance is necessary to identify the remaining poliovirus reservoirs and target areas for supplemental vaccination activities (i.e., mopping-up vaccination[§]) and prepare Indonesia for eventual certification of polio-free status (*2*).

[§]House-to-house administration of two doses of oral poliovirus vaccine at an interval of 4–6 weeks to all children aged <3 years who reside in areas where risk for wild poliovirus transmission is highest.

Polio Eradication — Continued

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Average Postpartum Length of Stay for Uncomplicated Deliveries — New Jersey, 1995

During 1970–1992, total lengths of hospital stay following delivery declined substantially for both mothers and newborn infants (*1*). In response to public perceptions that postpartum stays have become excessively short, 28 states have enacted legislation and the U.S. Senate is considering legislation* mandating that insurers provide health-care coverage for a minimum postpartum length of stay for both mother and infant. On June 28, 1995, New Jersey enacted legislation requiring insurance companies and health-maintenance organizations (HMOs) to pay for at least a 48-hour postpartum hospital stay for women and newborns following vaginal delivery and a 96-hour postpartum stay following cesarean delivery when requested by the mother or the attending physician.† To assess the effect of this law in New Jersey on the average length of stay for uncomplicated deliveries, electronic birth certificate (EBC) data for 1995 were analyzed from four New Jersey hospitals. This report summarizes the findings, which demonstrate that, following enactment of legislation, the average length of stay increased for uncomplicated deliveries at these four hospitals.

On January 17, 1995, New Jersey initiated pilot testing of an EBC system in four of the state's 73 facilities that perform deliveries (69 hospitals and four birthing centers). These four hospitals, representing approximately 8% of births in New Jersey, were selected because they were considered sufficiently diverse to test the system and to detect any problems before statewide implementation of the EBC system in all birthing facilities (V. Dato, Division of Family Health Services, New Jersey Department of Health and Senior Services, personal communication, September 1995). The selected hospitals (one regional perinatal center and three community hospitals) are nonprofit organizations and represent north, south, and central New Jersey and urban and suburban areas. Because the EBC data include the exact time of delivery and the day and hour of discharge for the infant, length of stay was calculated in hours and converted to the equivalent proportion of days.

Length of stay was defined as the time from birth to discharge of an infant from the hospital. Deliveries were classified as uncomplicated if they met the following criteria: 1) a live-born infant weighing ≥2500 g (≥5 lbs 8 oz) was delivered vaginally or by cesarean, 2) the mother and infant were discharged on the same day, and 3) the infant was not admitted or transferred to a neonatal intensive-care unit. Because this study focused on length of stay for uncomplicated deliveries, deliveries with a high likeli-

*"The New Borns' and Mothers' Health Protection Act of 1996; S. Rep. No. 969, 104th Cong., 2d Sess. (1996).
†N.J. Stat. Ann. 17:48–61 as amended by Public Law 1995, c. 138.

Average Postpartum Length of Stay — Continued

hood of having complications (i.e., those greater than the 97.5th percentile for length of stay) were excluded from analysis.[§]

From January 17 through December 31, 1995, a total of 9007 live-born infants were delivered at the four selected hospitals in New Jersey. Of the 7209 uncomplicated deliveries, 5619 (78%) were vaginal, and 1590 (22%) were cesarean. The number of deliveries that occurred before and after the law were similar: for vaginal deliveries, 46% and 54% of deliveries, respectively, and for cesarean deliveries, 47% and 53%, respectively.

After enactment of the New Jersey legislation, the average postpartum length of stay increased for both uncomplicated vaginal and cesarean deliveries (Figure 1). The average length of stay for vaginal deliveries increased 29%, from 1.4 days before the law to 1.8 days after the law (Table 1). The average length of stay for cesarean deliveries increased 18%, from 2.8 days before the law to 3.3 days after the law.

Length of stay also was examined by type of insurance and hospital (Table 1). After enactment of the law, length of stay increased for all types of insurance; increases were greater for private and federal assistance insurance[¶] than for self-pay groups. However, self-pay deliveries represented <2% of all deliveries. Length of stay also increased for all four participating hospitals after enactment of the law; the increase was greatest for the hospital with the shortest average length of stay for cesarean deliveries before enactment of the law.

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Editorial Note: The findings in this report indicate that, after enactment of legislation in New Jersey mandating insurance coverage for a minimum length of hospital stay for mother and infant following obstetric delivery, the average postpartum length of stay for all uncomplicated deliveries increased by 10–12 hours in these four hospitals. Because the New Jersey EBC system allowed calculation of the length of stay in hours, the system provides a more precise measure of the length of stay than most previous studies, which calculated length of stay in days.

The findings in this report are subject to at least three limitations. First, EBC data are subject to the limitations of other vital records data, including limited information (particularly about content of prenatal care). Second, because the analysis included only the four hospitals using the EBC system for the 6 months before enactment of the New Jersey legislation, the results may not be generalizable to the entire state. Finally, some insurance carriers administer both traditional health-care plans, which are subject to state regulation, and self-insured health plans, which are not. Therefore, for deliveries covered by these carriers, the EBC system cannot differentiate those deliveries exempt from the state law.

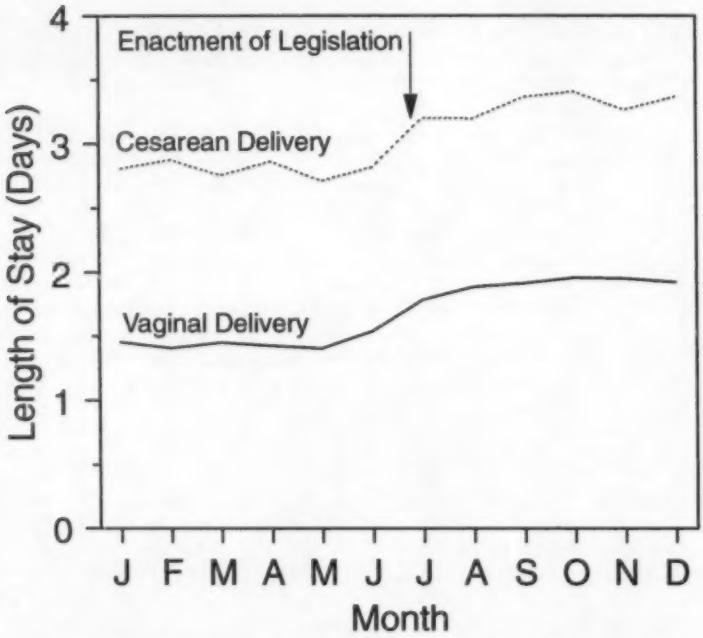
Following consumer demand for less medical intervention in the birthing process (*2*) and institution of cost-containment measures by the insurance industry, the na-

[§]Deliveries for which the length of stay was greater than the 97.5th percentile for the four hospitals were identified using distributions specific for type of delivery and occurrence before or after enactment of the law. For vaginal deliveries, postpartum lengths of stay that were >2.5 days before the law and >2.8 days after the law were excluded from analysis and, for cesarean deliveries, postpartum lengths of stay >4.4 days before the law and >5.1 days after the law were excluded. The resulting distributions of length of stay for uncomplicated deliveries were approximately normal.

[¶]Includes Medicaid, Medicare, and other federal programs.

Average Postpartum Length of Stay — Continued

FIGURE 1. Average postpartum length of stay following uncomplicated deliveries*, by delivery method — four selected hospitals†, New Jersey, January 17– December 31, 1995§



*Deliveries were classified as uncomplicated if they met the following criteria: 1) a live-born infant weighing ≥2500 g (≥5 lbs 8 oz) was delivered vaginally or by cesarean, 2) the mother and infant were discharged on the same day, and 3) the infant was not admitted or transferred to a neonatal intensive-care unit. Excluded from the analysis were deliveries with a length of stay greater than the 97.5th percentile for the four hospitals (i.e., those with a high likelihood of having complications). These were identified using distributions specific for type of delivery and occurrence before or after enactment of the law. For vaginal deliveries, postpartum lengths of stay that were >2.5 days before the law and >2.8 days after the law were excluded from analysis, and for cesarean deliveries, postpartum lengths of stay >4.4 days before the law and >5.1 days after the law were excluded. The resulting distributions of length of stay for uncomplicated deliveries were approximately normal.

†The selected facilities comprise one regional perinatal center and three community hospitals, are nonprofit organizations, and represent north, south, and central New Jersey and urban and suburban areas. These four of the state's 73 facilities that perform deliveries initiated pilot testing of an electronic birth certificate that includes the exact time of delivery and the day and hour of discharge for the infant, permitting calculation of length of stay in hours.

§This study comprised 5619 vaginal deliveries and 1590 cesarean deliveries.

Source: 1995 New Jersey electronic birth certificate data.

TABLE 1. Average postpartum length of stay* (LOS) following uncomplicated deliveries† before and after enactment of New Jersey legislation, by delivery method and selected characteristics — four selected hospitals,§ New Jersey, January 17–December 31, 1995

Characteristic	Vaginal				Cesarean			
	Average LOS		Absolute change (days)	Percentage change	Average LOS		Absolute change (days)	Percentage change
	Before law (n=2582)	After law (n=3037)			Before law (n=754)	After law (n=836)		
Mother's insurance¶								
Private**	1.4	1.8	0.4	29	2.8	3.3	0.5	18
Federal assistance††	1.3	1.8	0.5	38	2.7	3.3	0.6	22
Self-pay	1.3	1.7	0.4	31	2.8	3.0	0.2	7
Hospital								
1	1.3	1.8	0.5	38	2.9	3.3	0.4	14
2	1.3	1.9	0.6	46	2.3	3.1	0.8	35
3	1.3	1.7	0.4	31	3.1	3.2	0.1	3
4	1.5	1.9	0.4	27	3.0	3.5	0.5	17
Total	**1.4**	**1.8**	**0.4**	**29**	**2.8**	**3.3**	**0.5**	**18**

*In days.

†Deliveries were classified as uncomplicated if they met the following criteria: 1) a live-born infant weighing ≥2500 g (≥5 lbs 8 oz) was delivered vaginally or by cesarean, 2) the mother and infant were discharged on the same day, and 3) the infant was not admitted or transferred to a neonatal intensive-care unit. Excluded from the analysis were deliveries with a length of stay greater than the 97.5th percentile for the four hospitals (i.e., those with a high likelihood of having complications). These were identified using distributions specific for type of delivery and occurrence before or after enactment of the law. For vaginal deliveries, postpartum lengths of stay that were >2.5 days before the law and >2.8 days after the law were excluded from analysis, and for cesarean deliveries, postpartum lengths of stay >4.4 days before the law and >5.1 days after the law were excluded. The resulting distributions of length of stay for uncomplicated deliveries were approximately normal.

§The selected facilities comprise one regional perinatal center and three community hospitals, are nonprofit organizations, and represent north, south, and central New Jersey and urban and suburban areas. These four of the state's 73 facilities that perform deliveries initiated pilot testing of an electronic birth certificate that includes the exact time of delivery and the day and hour of discharge for the infant, permitting calculation of length of stay in hours.

¶Data were excluded for 1256 mothers (971 who had vaginal deliveries and 285 who had cesarean deliveries) whose insurance was categorized as "Other/Unknown insurance," and for 311 mothers (238 who had vaginal deliveries and 73 who had cesarean deliveries) for whom insurance information was missing.

**Includes commercial insurers, preferred-provider organizations, health-maintenance organizations (HMOs), and Medicaid HMOs.

††Medicaid, Medicare, and other federal programs.

Average Postpartum Length of Stay — Continued

tional average length of hospital stay for obstetric deliveries declined by nearly 50% during 1970–1992. In 1992, the average total length of stay for all hospital deliveries in the United States was 2.6 days (2.1 days for vaginal deliveries and 4.0 days for cesarean deliveries) (*1*). In the western United States, lengths of stay of 12–24 hours after uncomplicated vaginal deliveries are common (*3*). However, consumer groups, legislators, and health-care providers are concerned that early hospital discharge may adversely affect 1) the mother's feeling of preparedness to care for the infant and herself, 2) the ability of hospital staff to effectively teach a mother to care for the infant and herself and assess her ability to do so, 3) initiation and continuation of breastfeeding, 4) early diagnosis and treatment of infant and maternal morbidity, and 5) the ability to obtain adequate specimens for newborn metabolic screenings (*3*).

Over the past several decades, early postpartum discharge has been variously defined (*4*). In 1992, the American Academy of Pediatrics (AAP) and the American College of Obstetricians and Gynecologists defined early discharge for uncomplicated deliveries as <48 hours for vaginal delivery and <96 hours for cesarean delivery (*5*). In addition, in 1995, the AAP published guidelines for newborn discharge (*6*) that include meeting certain medical criteria and receiving appropriate support and follow-up. However, previous studies have not adequately examined the effects of short postpartum stays on maternal and infant outcomes because of small sample sizes, poor study designs, and lack of controls. In addition, most of these studies were conducted under specific, controlled circumstances (e.g., intensive and repeated in-home follow-ups) that do not represent well-established standards of care for health-care providers (*3*). Further research is needed to determine an optimal length of stay and adequate follow-up care for women and infants.

Because of federal legislation enacted in 1974 (Employee Retirement Income Security Act of 1974 [ERISA]**), state legislation cannot mandate coverage requirements for employer self-insured plans. An estimated 40%–55% of the insured U.S. population is covered by ERISA plans (*7*). The proposed New Borns' and Mothers' Health Protection Act of 1996 would require a minimum coverage for postpartum stays of 48 hours for vaginal deliveries and 96 hours for cesarean deliveries for all insurance plans in all states.

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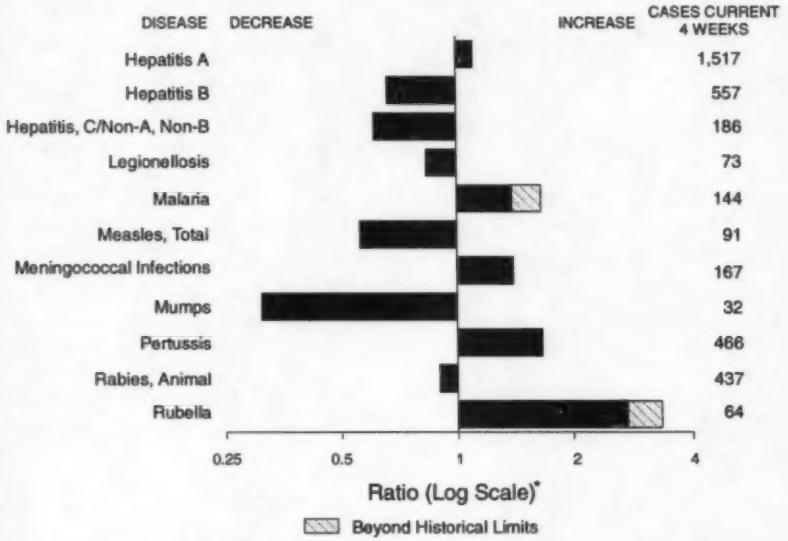
**Public Law 93-406 (29 USC 1001–1461).

FIGURE I. Selected notifiable disease reports, comparison of 4-week totals ending August 10, 1996, with historical data — United States



*Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — cases of selected notifiable diseases, United States, cumulative, week ending August 10, 1996 (32nd Week)

	Cum. 1996		Cum. 1996
Anthrax	-	HIV infection, pediatric*§	170
Brucellosis	53	Plague	-
Cholera	2	Poliomyelitis, paralytic¶	-
Congenital rubella syndrome	1	Psittacosis	22
Cryptosporidiosis*	1,075	Rabies, human	-
Diphtheria	1	Rocky Mountain spotted fever (RMSF)	357
Encephalitis: California*	16	Streptococcal toxic-shock syndrome*	10
eastern equine*	2	Syphilis, congenital**	-
St. Louis*	-	Tetanus	17
western equine*	-	Toxic-shock syndrome	89
Hansen Disease	63	Trichinosis	14
Hantavirus pulmonary syndrome*†	9	Typhoid fever	200

-: no reported cases
*Not notifiable in all states.
†Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases (NCID).
§Updated monthly to the Division of HIV/AIDS Prevention, National Center for HIV, STD, and TB Prevention (NCHSTP), last update July 30, 1996.
¶Three suspected cases of polio with onset in 1996 have been reported to date.
**Updated quarterly from reports to the Division of STD Prevention, NCHSTP. First quarter 1996 is not yet available.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending August 10, 1996, and August 12, 1995 (32nd Week)

Reporting Area	AIDS* Cum. 1996	AIDS* Cum. 1995	Chlamydia Cum. 1996	*Escherichia coli* O157:H7 NETSS† Cum. 1996	*Escherichia coli* O157:H7 PHLIS§ Cum. 1996	Gonorrhea Cum. 1996	Gonorrhea Cum. 1995	Hepatitis C/NA,NB Cum. 1996	Hepatitis C/NA,NB Cum. 1995	Legionellosis Cum. 1996	Legionellosis Cum. 1995
UNITED STATES	39,982	42,926	200,725	1,220	560	171,884	238,200	2,118	2,418	472	733
NEW ENGLAND	1,589	2,182	10,662	177	33	4,480	4,582	72	81	25	15
Maine	29	75	547	16	-	29	52	-	-	1	4
N.H.	50	70	397	19	12	80	71	6	12	-	1
Vt.	14	21	-	12	11	37	34	27	7	3	-
Mass.	740	996	4,068	79	10	1,346	1,647	33	58	14	9
R.I.	113	144	1,237	8	-	314	304	6	4	7	1
Conn.	643	876	4,413	43	-	2,674	2,474	-	-	N	N
MID. ATLANTIC	11,159	11,231	23,236	115	34	17,736	27,041	186	266	101	121
Upstate N.Y.	1,378	1,439	N	78	12	3,694	5,854	152	134	36	32
N.Y. City	6,277	5,655	9,512	6	-	4,931	10,942	1	1	3	3
N.J.	2,130	2,745	2,482	33	5	2,853	2,226	-	107	8	19
Pa.	1,374	1,392	11,242	N	17	6,258	8,019	33	24	54	67
E.N. CENTRAL	3,225	3,350	25,882	291	132	25,813	47,684	294	196	131	212
Ohio	696	723	11,986	75	36	8,836	14,972	22	7	55	98
Ind.	433	335	6,187	32	23	4,041	5,703	7	1	29	49
Ill.	1,397	1,394	2,502	130	16	10,486	11,960	46	58	9	22
Mich.	528	668	U	54	38	U	10,992	219	130	29	21
Wis.	171	230	5,207	N	19	2,450	4,057	-	-	9	22
W.N. CENTRAL	935	1,017	14,527	268	163	7,091	12,345	80	48	26	49
Minn.	170	218	-	101	94	U	1,890	1	2	3	-
Iowa	63	54	2,588	66	50	663	798	40	8	6	16
Mo.	469	472	7,640	38	-	4,927	7,049	21	15	6	13
N. Dak.	10	4	2	9	7	1	17	-	4	-	3
S. Dak.	8	9	689	9	-	95	120	-	1	2	-
Nebr.	65	75	898	21	3	161	707	4	10	7	11
Kans.	150	185	2,710	24	9	1,244	1,764	14	8	2	6
S. ATLANTIC	9,735	10,759	32,946	64	34	59,226	65,849	147	149	86	115
Del.	193	219	1,148	-	1	875	1,303	1	-	8	2
Md.	1,149	1,416	3,813	N	5	8,127	7,471	1	6	15	20
D.C.	638	640	N	-	-	2,758	2,732	-	-	6	4
Va.	647	880	6,532	N	18	5,800	6,437	8	9	13	11
W. Va.	73	62	1	N	2	313	470	7	36	1	3
N.C.	539	587	-	17	7	11,263	14,920	30	36	6	25
S.C.	500	569	-	6	3	6,743	7,710	17	15	4	21
Ga.	1,421	1,459	7,137	20	-	12,366	12,269	U	15	3	14
Fla.	4,575	4,927	14,315	14	-	10,981	12,537	83	32	30	15
E.S. CENTRAL	1,311	1,391	18,268	32	29	19,564	24,817	394	699	31	44
Ky.	212	179	4,083	7	4	2,518	2,825	20	22	3	8
Tenn.	497	561	7,998	13	22	6,924	8,379	303	675	15	21
Ala.	365	375	5,289	8	3	8,515	10,290	4	2	3	5
Miss.	237	276	U	4	-	1,607	3,323	67	U	10	10
W.S. CENTRAL	3,970	3,694	29,081	35	9	21,281	33,400	288	168	15	13
Ark.	170	166	-	11	3	2,263	3,099	3	4	-	5
La.	923	802	4,264	5	3	4,717	7,465	130	104	1	2
Okla.	165	173	4,703	6	1	2,926	3,343	69	30	4	3
Tex.	2,712	2,753	20,114	13	2	11,375	19,503	86	30	10	3
MOUNTAIN	1,198	1,330	9,673	91	48	4,480	5,578	396	289	24	87
Mont.	22	14	-	12	-	17	43	12	10	1	4
Idaho	25	31	944	20	5	67	86	88	34	-	2
Wyo.	3	10	350	-	2	16	33	122	120	3	8
Colo.	335	454	-	34	21	1,077	1,797	35	42	7	33
N. Mex.	114	111	U	5	-	540	636	42	35	1	4
Ariz.	342	350	3,934	N	13	2,287	2,024	44	24	8	7
Utah	117	87	921	12	-	182	136	44	10	2	12
Nev.	240	273	1,031	8	7	294	823	9	14	2	17
PACIFIC	6,859	7,972	36,450	147	78	12,213	16,904	261	522	33	77
Wash.	447	576	5,859	31	5	1,282	1,575	36	133	3	15
Oreg.	311	275	U	47	29	331	468	4	33	-	-
Calif.	5,964	6,910	25,872	66	36	10,105	14,059	99	346	28	57
Alaska	16	50	680	3	2	264	425	2	1	1	-
Hawaii	121	161	780	N	6	231	377	120	9	1	5
Guam	4	-	168	N	-	31	77	1	4	2	1
P.R.	1,352	1,692	N	12	U	157	363	71	141	-	-
V.I.	16	25	N	N	U	-	-	-	-	-	-
Amer. Samoa	-	-	-	N	U	-	15	-	-	-	-
C.N.M.I.	1	-	N	N	U	11	32	-	5	-	-

N: Not notifiable U: Unavailable -: no reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly to the Division of HIV/AIDS Prevention, National Center for HIV, STD, and TB Prevention, last update July 30, 1996.
†National Electronic Telecommunications System for Surveillance.
§Public Health Laboratory Information System.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending August 10, 1996, and August 12, 1995 (32nd Week)

Reporting Area	Lyme Disease		Malaria		Meningococcal Disease		Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal	
	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995
UNITED STATES	5,310	6,015	794	705	2,216	2,073	6,663	9,988	11,118	12,242	3,413	4,862
NEW ENGLAND	1,817	1,221	33	29	96	96	109	230	242	295	425	988
Maine	13	10	6	3	12	6	-	2	4	11	56	21
N.H.	21	18	1	1	3	16	1	1	8	9	41	109
Vt.	9	7	2	1	3	6	-	-	1	2	106	123
Mass.	103	70	11	9	36	33	50	39	113	162	65	314
R.I.	204	189	5	3	10	4	1	2	24	28	30	195
Conn.	1,467	927	8	12	32	31	57	186	92	83	127	226
MID. ATLANTIC	2,935	3,883	181	190	196	268	259	533	1,936	2,642	448	1,262
Upstate N.Y.	1,863	1,908	52	37	59	74	47	54	234	298	241	742
N.Y. City	182	292	91	94	30	36	71	231	1,068	1,518	-	-
N.J.	211	1,029	28	45	53	66	77	114	433	442	84	236
Pa.	679	654	10	14	54	92	64	134	201	384	123	284
E.N. CENTRAL	38	253	85	97	300	297	851	1,714	1,200	1,149	40	50
Ohio	25	20	9	6	118	86	310	546	176	161	6	5
Ind.	12	11	9	12	46	41	139	184	112	109	1	9
Ill.	1	13	35	54	77	80	284	678	689	610	7	6
Mich.	-	5	22	13	31	54	U	177	161	217	15	22
Wis.	U	204	10	12	28	36	118	129	62	52	11	8
W.N. CENTRAL	83	68	27	18	179	123	221	497	298	368	339	242
Minn.	18	5	9	3	23	21	27	29	70	93	18	11
Iowa	16	7	2	2	36	23	13	28	43	44	165	88
Mo.	22	35	7	6	74	46	159	422	127	135	15	23
N. Dak.	-	-	1	1	3	1	-	-	3	3	46	22
S. Dak.	-	-	-	1	8	5	-	-	14	13	76	66
Nebr.	1	4	3	3	16	10	6	9	13	17	3	4
Kans.	26	17	5	2	19	17	16	9	28	63	16	28
S. ATLANTIC	272	413	176	135	484	341	2,282	2,522	2,064	2,169	1,686	1,320
Del.	36	30	3	1	2	5	23	8	20	37	43	70
Md.	138	278	39	37	48	29	368	269	186	242	399	265
D.C.	1	2	7	11	8	4	98	73	82	65	8	10
Va.	25	30	24	30	35	45	279	380	178	146	349	253
W. Va.	9	18	3	1	11	8	1	8	40	51	67	77
N.C.	43	35	15	11	58	57	643	709	301	255	438	306
S.C.	3	9	9	-	44	44	254	376	221	204	57	95
Ga.	1	8	16	14	111	66	381	470	395	405	191	175
Fla.	16	3	60	30	167	83	235	229	641	764	134	69
E.S. CENTRAL	42	35	18	12	125	136	1,489	2,002	812	850	133	174
Ky.	8	8	3	1	20	35	83	113	155	186	32	15
Tenn.	16	17	8	4	16	48	525	507	237	280	45	65
Ala.	5	2	3	5	50	29	371	395	269	247	54	90
Miss.	13	8	4	2	39	24	510	987	151	137	2	4
W.S. CENTRAL	70	72	20	17	244	248	1,056	1,966	1,434	1,500	41	495
Ark.	19	6	-	2	28	25	113	301	118	146	14	33
La.	1	3	2	2	45	39	343	657	59	148	13	22
Okla.	5	28	-	1	23	25	123	116	116	128	14	26
Tex.	45	35	18	12	148	159	477	892	1,141	1,078	U	414
MOUNTAIN	5	6	35	39	123	153	89	147	350	395	81	91
Mont.	-	-	5	3	4	2	-	4	14	10	15	30
Idaho	2	-	-	1	19	7	2	-	6	8	-	-
Wyo.	2	3	3	-	3	5	2	-	3	1	20	21
Colo.	-	-	16	17	22	40	23	85	45	37	22	-
N. Mex.	-	1	1	4	21	29	1	5	52	56	3	3
Ariz.	-	-	4	6	33	45	56	21	146	194	16	27
Utah	1	-	4	5	12	12	2	4	34	19	2	7
Nev.	-	2	2	3	9	13	3	28	50	70	3	3
PACIFIC	48	64	219	168	469	411	307	377	2,782	2,874	220	240
Wash.	5	4	13	14	67	69	4	10	144	167	-	4
Oreg.	9	9	15	11	82	73	8	18	57	74	-	1
Calif.	33	51	182	132	312	259	294	348	2,436	2,477	212	228
Alaska	-	-	3	1	5	6	-	1	43	47	8	7
Hawaii	1	-	6	10	3	4	1	-	102	109	-	-
Guam	-	-	-	1	1	2	3	8	35	72	-	-
P.R.	-	-	-	1	4	18	81	173	63	120	31	32
V.I.	-	-	-	2	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-	3	-	-
C.N.M.I.	-	-	-	1	-	-	1	1	-	23	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE III. Cases of selected notifiable diseases preventable by vaccination, United States, weeks ending August 10, 1996, and August 12, 1995 (32nd Week)

Reporting Area	*H. influenzae*, invasive		Hepatitis (viral), by type				Measles (Rubeola)			
			A		B		Indigenous		Imported†	
	Cum. 1996*	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	1996	Cum. 1996	1996	Cum. 1996
UNITED STATES	755	747	16,259	17,197	5,706	6,192	37	367	4	29
NEW ENGLAND	20	30	199	183	110	151	-	8	1	4
Maine	-	3	13	17	2	6	-	-	-	-
N.H.	8	7	10	7	9	16	-	-	-	-
Vt.	1	2	4	4	10	2	-	1	1	1
Mass.	10	10	103	68	35	56	-	6	-	3
R.I.	1	3	9	20	7	8	-	-	-	-
Conn.	-	5	60	47	47	63	-	1	-	-
MID. ATLANTIC	117	104	980	1,068	858	875	1	19	-	5
Upstate N.Y.	37	25	265	251	225	227	-	-	-	-
N.Y. City	20	26	378	527	396	288	1	9	-	3
N.J.	36	11	205	146	155	223	-	-	-	-
Pa.	24	42	132	144	82	137	-	10	-	2
E.N. CENTRAL	116	133	1,354	2,052	586	710	-	6	-	3
Ohio	70	68	536	1,166	85	78	-	2	-	-
Ind.	7	17	192	98	102	139	-	-	-	-
Ill.	27	30	262	419	129	187	-	2	-	1
Mich.	7	16	264	235	232	256	-	1	-	2
Wis.	5	2	100	134	38	50	-	1	-	-
W.N. CENTRAL	33	55	1,314	1,192	260	418	-	17	1	2
Minn.	20	28	77	118	35	33	-	14	1	2
Iowa	5	3	237	61	59	31	-	-	-	-
Mo.	5	17	621	853	127	304	-	2	-	-
N. Dak.	-	-	28	19	-	4	-	-	-	-
S. Dak.	1	1	37	33	-	2	-	-	-	-
Nebr.	1	3	144	31	16	20	-	-	-	-
Kans.	1	3	170	77	23	24	-	1	-	-
S. ATLANTIC	176	150	749	691	900	816	-	6	-	5
Del.	2	-	9	8	6	6	-	1	-	-
Md.	42	53	127	128	191	161	-	2	-	1
D.C.	5	-	20	16	27	14	-	-	-	-
Va.	6	19	99	118	90	65	-	-	-	2
W. Va.	6	6	12	12	14	34	-	-	-	-
N.C.	20	24	87	73	227	193	-	3	-	1
S.C.	4	1	37	29	49	33	-	-	-	-
Ga.	72	43	61	50	8	62	-	-	-	1
Fla.	19	4	297	257	288	248	-	-	-	-
E.S. CENTRAL	19	6	925	1,033	495	566	-	-	-	-
Ky.	4	1	19	33	36	51	-	-	-	-
Tenn.	8	-	628	847	265	441	-	-	-	-
Ala.	6	4	125	55	39	74	-	-	-	-
Miss.	1	1	153	98	135	-	-	-	-	-
W.S. CENTRAL	31	39	3,373	2,070	756	735	3	23	-	2
Ark.	-	5	314	265	50	34	-	-	-	-
La.	3	1	107	61	75	118	-	-	-	-
Okla.	25	20	1,398	510	59	97	-	-	-	-
Tex.	3	13	1,554	1,234	572	486	3	23	-	2
MOUNTAIN	76	84	2,574	2,604	662	538	33	145	2	5
Mont.	-	-	80	69	6	16	-	-	-	-
Idaho	1	2	148	225	67	64	-	1	-	-
Wyo.	35	4	26	83	29	17	-	-	-	-
Colo.	11	10	278	321	82	78	-	4	-	3
N. Mex.	9	12	271	544	222	198	2	10	-	-
Ariz.	9	21	1,031	737	162	85	-	8	-	-
Utah	6	9	585	494	65	46	31	117	2	2
Nev.	5	26	155	131	29	34	-	5	-	-
PACIFIC	167	146	4,791	6,324	1,079	1,363	-	143	-	3
Wash.	2	8	321	494	60	118	-	45	-	-
Oreg.	22	20	562	1,610	39	83	-	4	-	-
Calif.	140	114	3,828	4,084	983	1,161	-	30	-	2
Alaska	1	-	30	27	9	9	-	63	-	-
Hawaii	2	4	50	109	8	12	-	1	-	1
Guam	-	-	2	5	-	4	U	-	U	-
P.R.	1	3	61	57	228	377	-	7	-	-
V.I.	-	-	-	6	-	12	U	-	U	-
Amer. Samoa	-	-	-	5	-	-	U	-	U	-
C.N.M.I.	10	11	1	21	5	10	U	-	U	-

N: Not notifiable U: Unavailable -: no reported cases

*Of 175 cases among children aged <5 years, serotype was reported for 37 and of those, 10 were type b.

†For imported measles, cases include only those resulting from importation from other countries.

TABLE III. (Cont'd.) Cases of selected notifiable diseases preventable by vaccination, United States, weeks ending August 10, 1996, and August 12, 1995 (32nd Week)

Reporting Area	Measles (Rubeola), cont'd. Total		Mumps			Pertussis			Rubella		
	Cum. 1996	Cum. 1995	1996	Cum. 1996	Cum. 1995	1996	Cum. 1996	Cum. 1995	1996	Cum. 1996	Cum. 1995
NITED STATES	396	258	3	397	558	130	2,296	2,095	3	185	92
EW ENGLAND	12	8	-	-	10	9	470	305	-	24	35
aine	-	-	-	-	4	-	18	19	-	-	-
.H.	-	-	-	-	1	-	40	23	-	-	1
.	2	-	-	-	-	-	13	41	-	2	-
ass.	9	2	-	-	2	9	394	211	-	20	7
I.	-	5	-	-	-	-	-	1	-	-	-
onn.	1	1	-	-	3	-	5	10	-	2	27
ID. ATLANTIC	24	11	-	57	82	10	169	168	-	7	12
pstate N.Y.	-	1	-	18	19	3	89	78	-	4	3
.Y. City	12	5	-	13	9	-	21	27	-	1	7
.J.	-	5	-	2	13	-	5	11	-	2	2
a.	12	-	-	24	41	7	54	52	-	-	-
.N. CENTRAL	9	13	2	74	95	15	225	254	-	3	3
hio	2	1	2	32	29	9	110	79	-	-	-
d.	-	-	-	5	7	-	19	18	-	-	-
.	3	1	-	18	28	5	69	45	-	1	-
ich.	3	5	-	18	31	1	22	35	-	2	3
is.	1	6	-	1	-	-	5	77	-	-	-
.N. CENTRAL	19	2	-	9	32	34	127	124	-	1	-
inn.	16	-	-	3	2	30	89	42	-	-	-
wa	-	-	-	1	8	-	4	6	-	1	-
o.	2	1	-	2	18	1	20	36	-	-	-
. Dak.	-	-	-	2	-	-	1	6	-	-	-
. Dak.	-	-	-	-	-	1	3	8	-	-	-
ebr.	-	-	-	-	4	2	6	7	-	-	-
ans.	1	1	-	1	-	-	4	19	-	-	-
. ATLANTIC	11	11	1	65	85	9	290	173	-	89	8
el.	1	-	-	-	-	1	11	9	-	-	-
d.	3	1	-	19	27	6	105	21	-	-	1
.C.	-	-	-	-	-	-	-	4	-	1	-
a.	2	-	1	10	16	-	26	10	-	2	-
. Va.	-	-	-	-	-	-	2	-	-	-	-
.C.	4	-	-	14	16	-	49	81	-	75	1
.C.	-	-	-	5	7	1	22	16	-	1	-
a.	1	2	-	2	6	-	13	13	-	-	-
la.	-	8	-	15	13	1	62	19	-	10	6
.S. CENTRAL	-	-	-	18	7	2	62	96	1	3	1
y.	-	-	-	-	-	-	26	11	-	-	-
enn.	-	-	-	1	-	-	17	55	1	1	1
la.	-	-	-	3	4	2	12	30	-	2	-
liss.	-	-	-	14	3	-	7	-	N	N	N
.S. CENTRAL	25	20	-	16	38	2	59	163	-	2	7
rk.	-	2	-	-	5	1	4	27	-	-	-
a.	-	18	-	11	8	-	6	11	-	1	-
kla.	-	-	-	-	-	-	8	17	-	-	-
ex.	25	-	-	5	25	1	41	108	-	1	7
OUNTAIN	150	68	-	22	25	13	242	401	-	6	4
ont.	-	-	-	-	1	1	12	3	-	-	-
daho	1	-	-	-	2	11	85	85	-	2	-
Vyo.	-	-	-	-	-	-	3	1	-	-	-
olo.	7	26	-	2	-	1	64	64	-	2	-
. Mex.	10	31	N	N	N	-	34	63	-	-	-
riz.	8	10	-	1	2	-	11	146	-	1	3
tah	119	-	-	2	11	-	11	17	-	-	1
ev.	5	1	-	17	9	-	22	22	-	1	-
ACIFIC	146	125	-	136	184	36	652	411	2	50	22
ash.	45	19	-	18	10	7	235	96	-	1	-
reg.	4	1	-	-	-	-	29	27	-	1	-
alif.	32	103	-	99	158	29	374	250	2	45	18
laska	63	-	-	2	12	-	2	-	-	-	-
awaii	2	2	-	17	4	-	12	38	-	3	4
uam	-	-	U	5	3	U	1	2	U	-	1
R.	7	3	-	1	2	-	1	1	-	-	-
I.	-	-	U	-	3	U	-	-	U	-	-
mer. Samoa	-	-	U	-	-	U	-	-	U	-	-
N.M.I.	-	-	U	-	-	U	-	-	U	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE IV. Deaths in 121 U.S. cities,* week ending August 10, 1996 (32nd Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	533	386	82	43	13	9	37
Boston, Mass.	145	94	28	12	6	5	9
Bridgeport, Conn.	38	29	6	1	2	-	2
Cambridge, Mass.	9	9	-	-	-	-	-
Fall River, Mass.	18	12	5	1	-	-	2
Hartford, Conn.	48	32	7	8	-	1	1
Lowell, Mass.	30	25	4	-	1	-	3
Lynn, Mass.	13	9	2	2	-	-	-
New Bedford, Mass.	27	24	1	2	-	-	2
New Haven, Conn.	49	30	7	8	2	2	3
Providence, R.I.	41	32	6	1	2	-	1
Somerville, Mass.	3	-	2	1	-	-	-
Springfield, Mass.	37	35	2	-	-	-	1
Waterbury, Conn.	28	23	3	2	-	-	4
Worcester, Mass.	47	32	9	5	-	1	9
MID. ATLANTIC	2,313	1,516	455	259	46	37	101
Albany, N.Y.	45	31	5	6	3	-	3
Allentown, Pa.	15	12	2	1	-	-	1
Buffalo, N.Y.	85	71	10	2	1	1	3
Camden, N.J.	30	13	11	2	-	4	1
Elizabeth, N.J.	10	5	3	1	-	1	-
Erie, Pa.§	33	29	4	-	-	-	3
Jersey City, N.J.	35	22	7	4	2	-	3
New York City, N.Y.	1,152	743	230	144	18	17	24
Newark, N.J.	65	29	21	10	3	2	4
Paterson, N.J.	34	11	9	13	-	1	1
Philadelphia, Pa.	400	250	87	44	15	4	13
Pittsburgh, Pa.§	46	32	5	5	-	4	5
Reading, Pa.	15	12	-	2	1	-	3
Rochester, N.Y.	139	99	28	9	2	1	19
Schenectady, N.Y.	10	6	3	1	-	-	1
Scranton, Pa.§	25	21	3	1	-	-	1
Syracuse, N.Y.	109	84	15	8	1	1	10
Trenton, N.J.	20	11	4	4	-	1	1
Utica, N.Y.	19	16	2	1	-	-	1
Yonkers, N.Y.	26	19	6	1	-	-	5
E.N. CENTRAL	2,066	1,323	397	191	87	65	106
Akron, Ohio	38	26	10	1	-	1	-
Canton, Ohio	33	28	3	1	-	1	2
Chicago, Ill.	513	275	108	69	30	28	34
Cincinnati, Ohio	147	103	25	14	2	3	10
Cleveland, Ohio	154	97	36	14	6	1	3
Columbus, Ohio	212	136	42	12	13	9	13
Dayton, Ohio	108	68	31	6	2	1	8
Detroit, Mich.	181	97	35	35	11	3	-
Evansville, Ind.	39	30	5	2	1	1	1
Fort Wayne, Ind.	65	46	12	3	4	-	5
Gary, Ind.	U	U	U	U	U	U	U
Grand Rapids, Mich.	66	45	10	5	4	2	5
Indianapolis, Ind.	137	96	21	9	9	2	3
Madison, Wis.	U	U	U	U	U	U	U
Milwaukee, Wis.	99	64	21	8	1	5	4
Peoria, Ill.	33	24	5	4	-	-	3
Rockford, Ill.	45	28	12	2	3	-	4
South Bend, Ind.	52	45	4	2	1	-	4
Toledo, Ohio	95	73	12	2	-	8	6
Youngstown, Ohio	49	42	5	2	-	-	1
W.N. CENTRAL	710	486	119	43	26	25	24
Des Moines, Iowa	U	U	U	U	U	U	U
Duluth, Minn.	35	26	6	3	-	-	2
Kansas City, Kans.	49	37	5	2	3	2	3
Kansas City, Mo.	108	60	23	10	1	3	8
Lincoln, Nebr.	26	19	4	1	1	1	-
Minneapolis, Minn.	131	95	19	8	4	5	6
Omaha, Nebr.	73	58	9	2	2	2	2
St. Louis, Mo.	117	77	23	6	4	7	-
St. Paul, Minn.	58	46	8	3	1	-	2
Wichita, Kans.	113	68	22	8	10	5	1
S. ATLANTIC	1,388	821	307	176	46	36	60
Atlanta, Ga.	176	92	49	21	7	7	1
Baltimore, Md.	272	158	55	42	8	9	26
Charlotte, N.C.	67	47	9	7	2	2	3
Jacksonville, Fla.	116	72	22	19	3	-	2
Miami, Fla.	116	70	25	15	3	3	2
Norfolk, Va.	52	30	12	3	4	3	3
Richmond, Va.	67	42	16	6	1	1	3
Savannah, Ga.	38	27	6	4	1	-	3
St. Petersburg, Fla.	36	27	9	-	-	-	-
Tampa, Fla.	159	104	33	17	2	2	11
Washington, D.C.	273	146	61	42	15	9	6
Wilmington, Del.	16	6	10	-	-	-	-
E.S. CENTRAL	774	497	171	60	21	23	59
Birmingham, Ala.	103	59	26	7	4	5	4
Chattanooga, Tenn.	92	60	21	6	1	4	8
Knoxville, Tenn.	94	73	12	4	5	-	11
Lexington, Ky.	69	39	21	5	-	4	4
Memphis, Tenn.	182	123	42	12	5	-	22
Mobile, Ala.	77	46	15	8	4	4	4
Montgomery, Ala.	28	16	8	2	1	1	-
Nashville, Tenn.	129	81	26	16	1	5	6
W.S. CENTRAL	1,458	948	280	146	44	40	75
Austin, Tex.	53	38	7	5	2	1	5
Baton Rouge, La.	60	38	10	10	2	-	3
Corpus Christi, Tex.	59	37	16	5	1	-	3
Dallas, Tex.	178	105	30	29	4	10	4
El Paso, Tex.	77	55	14	4	3	1	5
Ft. Worth, Tex.	121	75	23	15	5	3	-
Houston, Tex.	322	212	67	27	9	7	29
Little Rock, Ark.	66	47	12	4	2	1	2
New Orleans, La.	138	93	23	17	3	2	-
San Antonio, Tex.	180	118	34	15	8	5	8
Shreveport, La.	94	62	19	6	3	4	12
Tulsa, Okla.	110	68	25	9	2	6	4
MOUNTAIN	873	597	153	74	32	15	54
Albuquerque, N.M.	89	69	12	7	1	-	-
Colo. Springs, Colo.	53	38	9	4	2	-	4
Denver, Colo.	106	80	10	12	2	2	10
Las Vegas, Nev.	155	104	26	12	9	3	5
Ogden, Utah	29	22	2	3	2	-	1
Phoenix, Ariz.	207	119	52	22	8	5	14
Pueblo, Colo.	20	19	-	1	-	-	4
Salt Lake City, Utah	95	56	20	9	5	5	6
Tucson, Ariz.	119	90	22	4	3	-	10
PACIFIC	1,703	1,137	320	156	44	43	155
Berkeley, Calif.	16	9	4	1	1	1	-
Fresno, Calif.	82	49	14	9	6	3	9
Glendale, Calif.	17	13	2	2	-	-	1
Honolulu, Hawaii	74	53	14	5	2	-	11
Long Beach, Calif.	64	43	13	5	3	-	15
Los Angeles, Calif.	340	232	72	25	7	4	17
Pasadena, Calif.	32	19	6	3	-	4	4
Portland, Oreg.	123	90	16	9	6	2	4
Sacramento, Calif.	153	106	28	14	3	2	22
San Diego, Calif.	136	85	21	14	7	9	17
San Francisco, Calif.	144	87	30	21	1	3	21
San Jose, Calif.	167	110	37	12	1	7	15
Santa Cruz, Calif.	21	14	4	3	-	-	2
Seattle, Wash.	154	97	27	24	3	3	3
Spokane, Wash.	67	45	15	3	1	3	5
Tacoma, Wash.	113	85	17	6	3	2	9
TOTAL	11,818¶	7,711	2,284	1,148	359	293	671

U: Unavailable -: no reported cases

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

†Pneumonia and influenza.

§Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

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